WHEEL STRUCTURE WHOSE SPEED CAN BE CONTROLLED

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a wheel structure, and more particularly to a wheel structure whose rotational speed can be controlled to the optimum state.

2. Description of the Related Art

A conventional roller skate or scooter can provide an exercising an amusing effect to the user, so that the user can employ the roller skate or scooter to obtain an exercising effect or a funny amusement. However, the rotational speed of the rollers or wheels of the conventional roller skate or scooter cannot be adjusted or controlled, thereby easily causing danger to the user, especially to the learner or the kid, when the conventional roller skate or scooter is moved at a higher speed.

SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide a wheel structure whose rotational speed can be efficiently controlled to the optimum state, thereby facilitating a learner or a kid employing the wheel structure.

Another objective of the present invention is to provide a wheel structure that is available for the roller skate or scooter. thereby facilitating the learner or the kid practicing the roller skate or scooter.

A further objective of the present invention is to provide a wheel structure, wherein the control device produces a braking effect to the roller by the friction between the urging face of the push member and the plane portion of the roller, so as to reduce and control the rotational speed of the roller.

In accordance with the present invention, there is provided a wheel structure, comprising:

a support rack having two ends each provided with a roller and a control device; wherein:

the roller is rotatably mounted on the respective end of the support rack;

the control device is mounted on the respective end of the support rack and is urged on the roller to reduce the rotational speed of the roller.

Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an exploded perspective view of a wheel structure in accordance with the preferred embodiment of the present invention;

Fig. 2 is an exploded perspective view of the wheel structure used for a roller skate in accordance with the preferred embodiment of the present invention;

Fig. 3 is a perspective assembly view of the wheel structure used for a roller skate in accordance with the preferred embodiment of the present invention;

Fig. 4 is a partially cut-away side plan cross-sectional assembly view of the wheel structure as shown in Fig. 1;

Fig. 5 is a schematic operational view of the wheel structure as shown in Fig. 4 in use;

Fig. 6 is a plan assembly view of the wheel structure in accordance with another embodiment of the present invention;

Fig. 7 is a schematic operational view of the wheel structure as shown in Fig. 6 in use; and

Fig. 8 is a perspective assembly view of the wheel structure used for a scooter in accordance with the preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings and initially to Figs. 1-5, a wheel structure in accordance with the preferred embodiment of the present invention is used for a roller skate 2 and comprises a support rack 10 secured on the bottom of a shoe 20 of the roller skate 2.

The support rack 10 has two ends 12 each provided with a roller 30 and a control device 50. Preferably, each of the two ends 12 of the support rack

10 has a rectangular shape and is provided with a shaft 11 protruded outward therefrom.

The roller 30 is rotatably mounted on the shaft 11 of the respective end 12 of the support rack 10 by a bearing 40. The roller 30 has a first side formed with an annular flange 35. The annular flange 35 of the roller 30 has a side formed with a plane portion 32 and has an inner wall formed with a toothed portion 33. The roller 30 has a second side formed with a stepped recess 31 for receiving the bearing 40.

In addition, the shaft 11 of the support rack 10 is formed with an outer thread 110, and a locking nut 112 is screwed on the outer thread 110 of the shaft 11 of the support rack 10 and is rested on the bearing 40 as shown in Fig. 4, so that the roller 30 is rotatably mounted on the shaft 11 of the respective end 12 of the support rack 10 by the locking nut 112.

The control device 50 is secured on the respective end 12 of the support rack 10 and is mounted in the annular flange 35 of the roller 30. The control device 50 includes a cover 53, a circular plate 52, a push member 51, and an adjusting member 54.

The cover 53 of the control device 50 is secured on the respective end 12 of the support rack 10. The cover 53 has a first side having a center formed with a rectangular positioning hole 532 mounted on the respective rectangular end 12 of the support rack 10. The cover 53 has a periphery formed with a through hole 531.

The circular plate 52 of the control device 50 is combined with the cover 53 by a screw member 56. The circular plate 52 has a first side rested on a second side of the cover 53 and a second side formed with a tapered receiving recess 522. The receiving recess 522 of the circular plate 52 has a center formed with a through hole 521 aligning with the through hole 531 of the cover 53. The receiving recess 522 of the circular plate 52 has a periphery formed with at least one protruding rib 523. The circular plate 52 has an outer wall rested on the toothed portion 33 of the roller 30.

The push member 51 of the control device 50 is movably mounted on the second side of the circular plate 52. The push member 51 has a first end formed with a tapered head 510 rotatably mounted in the receiving recess 522 of the circular plate 52. The tapered head 510 of the push member 51 has a periphery formed with at least one guide slot 513 for receiving the protruding rib 523 of the circular plate 52. The tapered head 510 of the push member 51 has a side formed with an urging face 512 that can be moved to press the plane portion 32 of the annular flange 35 of the roller 30. The push member 51 has a second end extended through the through hole 521 of the circular plate 52 and the through hole 531 of the cover 53. Preferably, the second end of the push member 51 is formed with an outer thread 511.

The adjusting member 54 of the control device 50 is rotatably mounted on the first side of the cover 53 and is combined with the second end of the push member 51 for rotating the push member 51. Preferably, the

adjusting member 54 is formed with an inner thread 541 screwed on the outer thread 511 of the second end of the push member 51.

In operation, referring to Figs. 4 and 5 with reference to Figs. 1-3, the roller 30 is rotatably mounted on the shaft 11 of the respective end 12 of the support rack 10, while the control device 50 is secured on the respective end 12 of the support rack 10 and is mounted in the annular flange 35 of the roller 30.

When the adjusting member 54 is rotated, the push member 51 is rotated by rotation of the adjusting member 54, so that the protruding rib 523 of the circular plate 52 is detached from the guide slot 513 of the tapered head 510 of the push member 51 and is urged on the periphery of the tapered head 510 of the push member 51, thereby forcing the push member 51 to move toward the roller 30 and to move from the position as shown in Fig. 4 to the position as shown in Fig. 5, such that the urging face 512 of the tapered head 510 of the push member 51 is urged on the plane portion 32 of the annular flange 35 of the roller 30, thereby producing a braking effect to the roller 30 by the friction between the urging face 512 of the push member 51 and the plane portion 32 of the roller 30, so as to reduce the rotational speed of the roller 30.

Alternatively, when the adjusting member 54 is rotated in the reverse direction, the push member 51 is rotated by rotation of the adjusting member 54, so that the protruding rib 523 of the circular plate 52 is received in the guide slot 513 of the tapered head 510 of the push member 51, thereby forcing the push member 51 to move away from the roller 30 and to move from the

position as shown in Fig. 5 to the position as shown in Fig. 4, such that the urging face 512 of the tapered head 510 of the push member 51 is detached from the plane portion 32 of the annular flange 35 of the roller 30, and the roller 30 can be rotated normally.

Referring to Figs. 6 and 7, a wheel structure in accordance with another embodiment of the present invention is shown, wherein the receiving recess 522 of the circular plate 52 is formed with a slit 60, so that the circular plate 52 has a flexible feature and can be expanded outward when the receiving recess 522 of the circular plate 52 is compressed.

In operation, when the adjusting member 54 forces the push member 51 to move away from the plane portion 32 of the roller 30, the tapered head 510 of the push member 51 will push and compress the tapered receiving recess 522 of the circular plate 52, so that the circular plate 52 can be expanded outward from the position as shown in Fig. 6 to the position as shown in Fig. 7, and the outer wall of the circular plate 52 is urged on the inner wall of the roller 30, thereby producing a braking effect to the roller 30 by the friction between the outer wall of the circular plate 52 and the inner wall of the roller 30, so as to reduce the rotational speed of the roller 30. In addition, the outer wall of the circular plate 52 is rested on the toothed portion 33 of the roller 30 to enhance the friction effect.

Referring to Fig. 8, the wheel structure in accordance with the preferred embodiment of the present invention is used for a scooter 70, and the support rack 10 is secured on the bottom of the scooter 70.

Although the invention has been explained in relation to its preferred embodiment(s) as mentioned above, it is to be understood that many other possible modifications and variations can be made without departing from the scope of the present invention. It is, therefore, contemplated that the appended claim or claims will cover such modifications and variations that fall within the true scope of the invention.